

Signals Classification for SIGINT & EW

PROBLEMS

What's Needed?

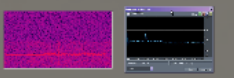
- Precision is lacking
- RF Environment is dense (HF, UHF)
- RF Sigs are difficult
- Hostile (Russia and PRC)



STATE of THINGS

What we're NOT doing well

- Spectral Awareness Systems (no depth nor detail)
- Cognitive Systems that aren't cognitive (no cognition)
- Modulation Recognition (no precision)
- Visual and Shape Based Recognition (misleading)
- Cold War thinking (just can't change)



RESULTS...?

What 'classification' looks like now...

- Modulation Recognition
- PSK 300 bd 170 Hz Shift
 - burst determination
- Shape-based Recognition
- PSK 300 bd 170 Hz Shift
 - burst determination

Summary: inaccurate, incomplete, misleading

SUMMARY

Back to the Future - Holistic COMINT

- What we can do...
- More RF savvy (telecomms industry)
 - More COMINT
 - More analytics
 - RU example

- What Precision Classification and Fingerprinting enables:
- Holistic COMINT
 - Truly Cognitive EW



UBIQUITY

AI can grow these capabilities

- Precision classification can be deployed NOW
- Precision fingerprinting can be deployed NOW
- ANY system, any scale, any platform

- Low-cost (examples...)
- High-impact (examples...)

- GRC and Rapid Capability Offices

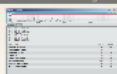


Precision, Cognition and AI

Precision techniques | Fingerprinting

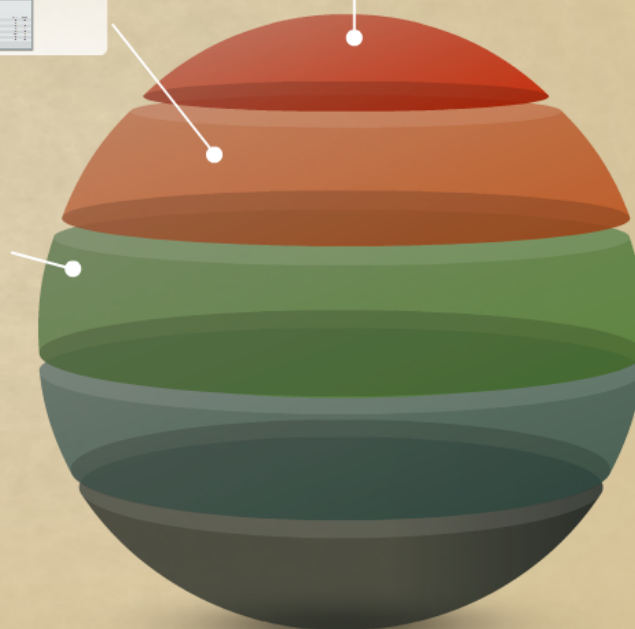
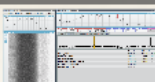
- Sign variants
- High accuracy
- Even more accuracy
- More resolution

...done! (say cognition?)
and AI can automate, weight, validate



PRECISION and Cognition

- Precision Classification
- needed for EW and SIGINT
 - needed for EA and ED
 - needed even for enhanced awareness



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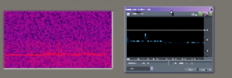
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Precision, Cognition and AI

Precision techniques | Fingerprinting

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- High accuracy
- Even more accuracy
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...done! Easy cognition? and AI can automate, weight, validate.

UBIQUITY

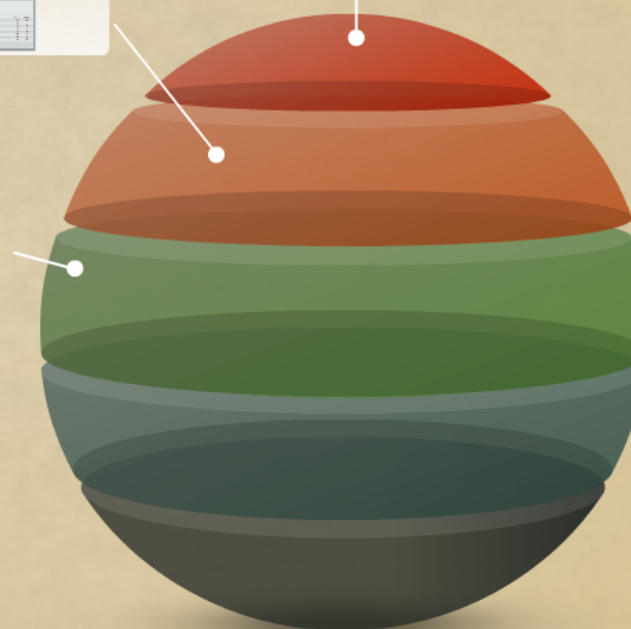
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PRECISION and Cognition

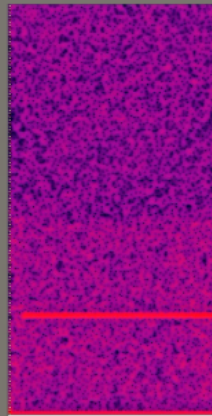
Precision Classification

- needed for EW and SIGINT
- needed for EA and EE
- needed even for enhanced awareness





- Speech
- Cognition
- Motor
- Visual
- Color

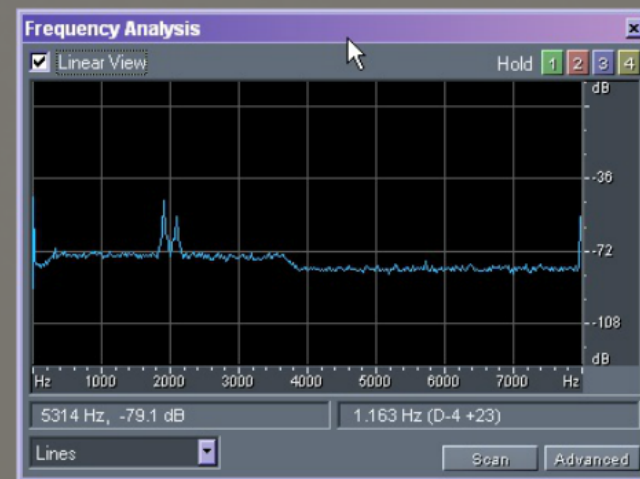
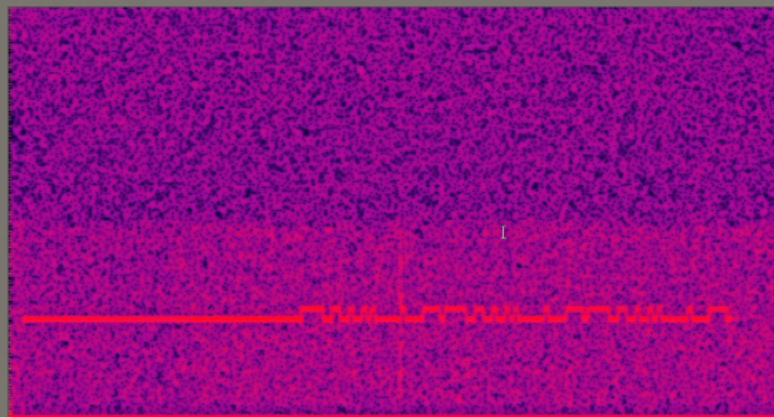




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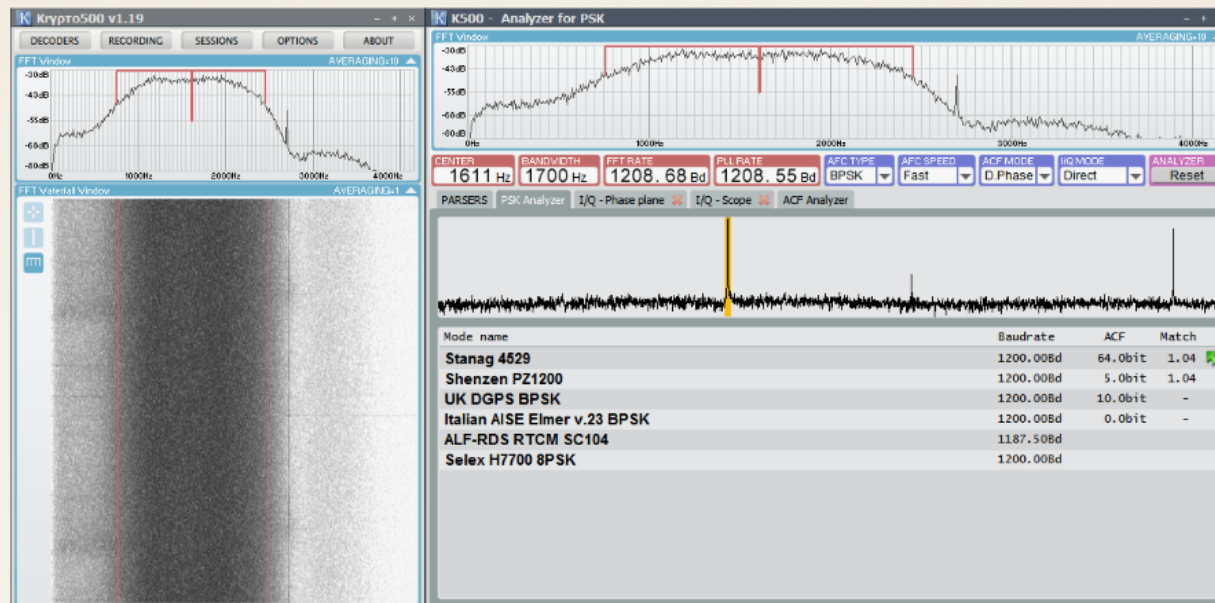


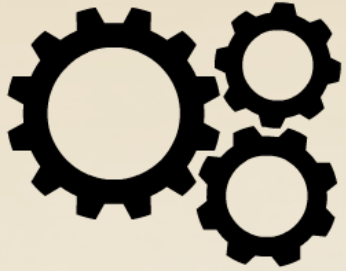
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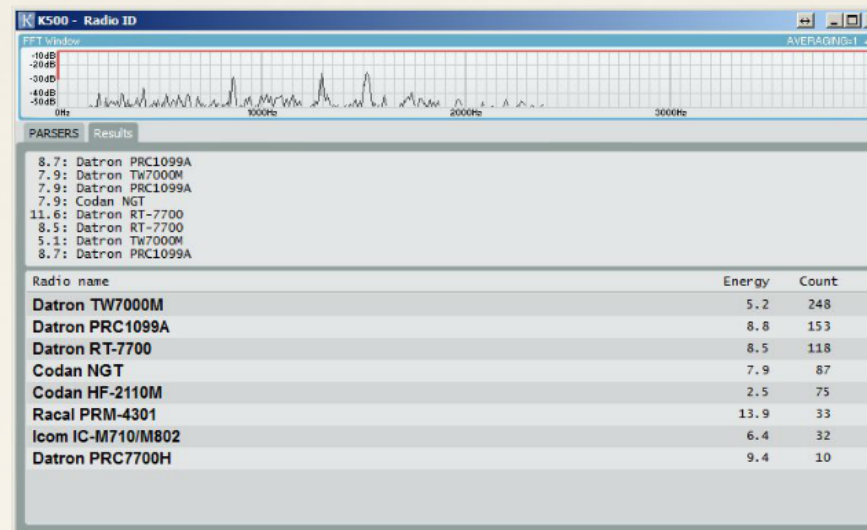
Precision, Cognition and AI

Precision techniques | Fingerprinting

- 15+ variants
- High accuracy

- Even more accuracy
- More resolution

...dare I say...cognition?
...and AI can automate, weight, validate...

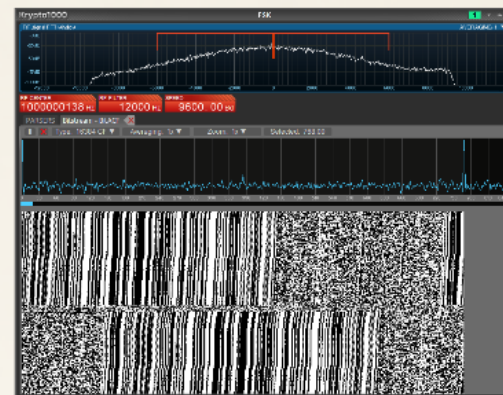
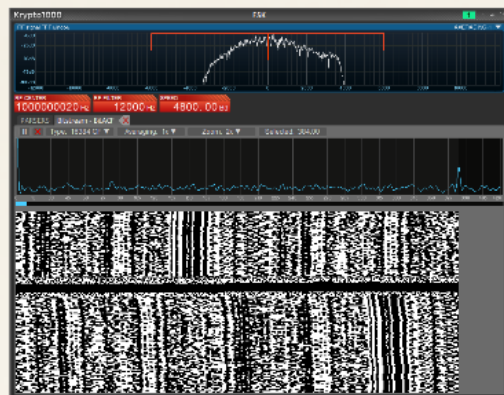




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- QRC and Rapid Capability Offices



Shape-based Recognition

- FSK 100 bd 170 Hz Shift
- (burst determination)

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SUMMARY

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What we can do....

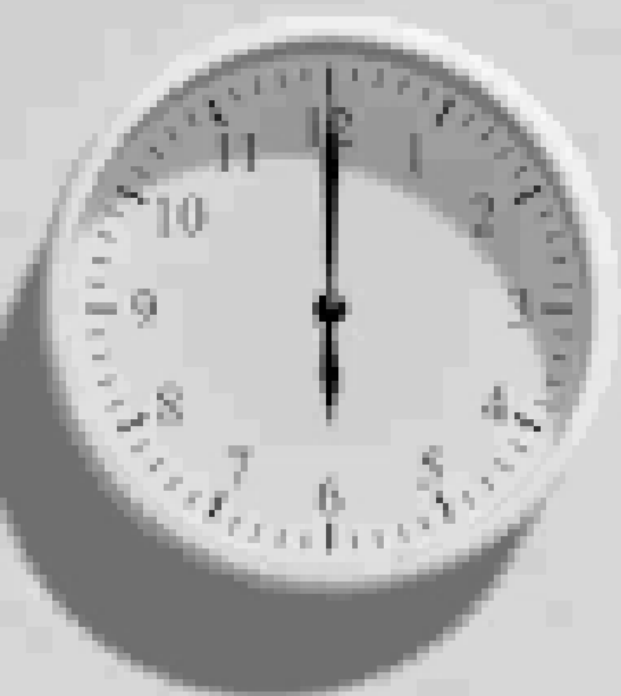
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What Precision Classification and Fingerprinting enable...

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- Truly Cognitive EW



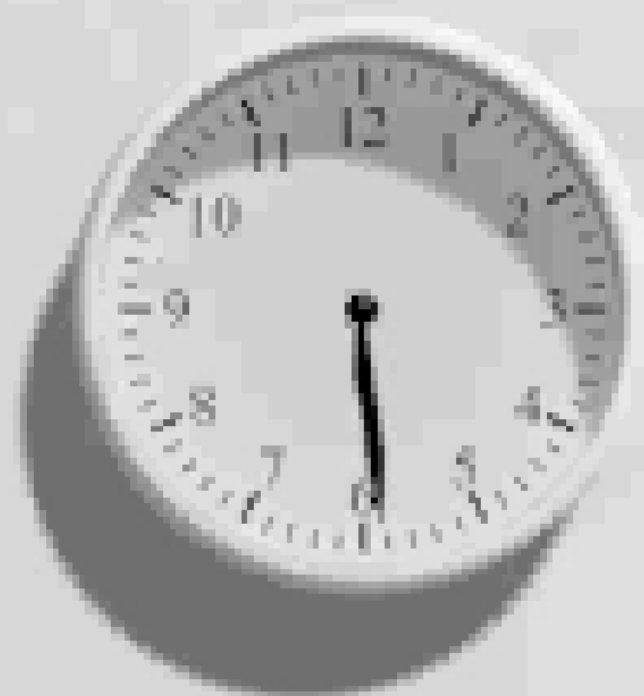
INFORMATION TIME KNOWLEDGE



INFORMATION



TIME



KNOWLEDGE